

## The bird deaths investigation

Residents began reporting the deaths of large numbers of native birds in Esperance in the first week of December 2006. By the end of the month, more than 20 individual reports of dead birds had been received at the Department of Environment and Conservation's Esperance office. Calculations using local bird density data suggest that approximately 4000 birds died altogether.

DEC notified the Department of Health and the Shire of Esperance of the bird deaths on 14 December.

Most of the dead birds were honeyeaters, miners and wattlebirds, but other species were also affected including silveryeyes, pardalotes, magpies and ravens. These species occupy home ranges of various sizes and most of them feed on nectar and insects.

One hundred dead birds were collected and stored in freezers at the DEC office, ready for testing. At the same time, the Esperance staff were battling wildfires – there were 13 major fires in the district in the last three weeks in December.

Many of the birds collected were found to be too badly decomposed for testing and had to be discarded. Eight were sent to the Department of Agriculture and Food's Animal Health Laboratory (AHL) for analysis, the first of them arriving on 21 December.

### Initial testing

With no indication of what had killed the birds, AHL had to carry out a wide range of tests to find out what had happened. They began by looking for bacterial and viral infections, including avian influenza or bird flu, and were able to rule these out. Naturally-occurring toxins were then considered and eliminated.

Storms associated with Cyclone Isobel hit Esperance on 4–5 January, well after the mass bird deaths.

Tissue samples were then sent to the Chemistry Centre (WA) for chemical analysis for pesticides and heavy metals, and to CSIRO's Australian Animal Health Laboratory to test for exotic animal diseases. The Chemistry Centre found prominent levels of lead and phosphorus, but with nothing to compare them to, it wasn't known if these levels were normal for the area.

It was therefore necessary to collect additional samples of bird species in the Esperance area for further testing, so that a clear conclusion could be drawn from the results. The control group was made up of fresh road-kill samples and birds shot under licence by DEC officers. This required steel-shot cartridges, which had to be trucked to WA from the eastern States, to prevent contamination of the control birds with lead.

Further reports of bird deaths around the Esperance townsite began from 7 March.

### Lead poisoning likely cause

AHL's analysis of the control birds showed their lead levels were many times lower than the small sample of birds originally tested, suggesting that the birds found dead in December/January died of lead poisoning. In summary, AHL reported:

- tests for avian influenza, Newcastle disease and West Nile virus infection were negative;
- tests for toxic blue green water in local ponds were negative, although the ponds had been heavily diluted by torrential rainfall before samples could be collected;
- no organo-chlorines, organo-phosphates or pyrethroid pesticides were detected in tissue samples;
- significant amounts of lead were found in the livers, kidneys and bones of birds that were found dead in Esperance; and
- only trace levels of lead were found in similar tissues taken from birds in the control group.

The test results did not provide direct evidence of a lead source, however it was noted that lead carbonate was being transported into Esperance for shipping through the Esperance port. A review of the Esperance Port Authority's environmental licence was already under way by this stage, following air monitoring results showing dust was leaving the port (see Fact Sheet 2).

DEC formally notified the Department of Health, the Shire of Esperance and the Esperance Port Authority on 9 March that lead poisoning was believed to be the most likely cause of the first mass bird deaths.

### **Further birds found dead**

Altogether, more than 200 birds are believed to have died in March, most of them purple-crowned lorikeets, a nomadic species not reported in the earlier mass deaths. Purple-crowned lorikeets travel from area to area as trees blossom. The lorikeets rely entirely on nectar for food and water and are not known to come to the ground for any reason.

The second episode of mass bird deaths and the community's quick response allowed DEC to collect fresh samples in much greater numbers than was possible in December/January. More than 180 dead birds were collected and 160 of these were sent to AHL for analysis between 8 and 12 March, together with samples of native tree blossoms.

AHL reported on 13 March that their tests on the lorikeets showed that lead poisoning was the likely cause of death. Zoologists from DEC and the WA Museum were consulted about how the birds might be coming into contact with lead and getting it into their system.

The finding that lead poisoning was the most probable cause of the bird deaths led to a much wider environmental investigation to confirm the source of the lead (see Fact Sheet 3).

A prevention notice was served on the Esperance Port Authority on 15 March to prevent it receiving and shipping lead carbonate. The Port Authority had voluntarily halted shipping lead carbonate earlier in the week, but the prevention notice meant that movement of lead through the port could only resume if and when DEC decides it is safe to do so.

Isotope testing commissioned by DEC on bird liver samples matched the lead in these and other samples to material transported into and out of the town (see Fact Sheet 3 for further results).

Preliminary results of the leaf, flower stamen and bird feather tests carried out by AHL and the Chemistry Centre show high lead levels. Analysis of the results is continuing.

### **The following DEC media statements have been issued and are available on the Department's website:**

DEC investigates further bird deaths, 17 January  
Esperance bird deaths update, 1 February  
Esperance bird death test results, 9 March  
Esperance bird deaths update, 13 March  
DEC issues pollution prevention notice, 15 March  
Esperance testing and investigation update, 19 March  
DEC to monitor nickel loading, 21 March  
Esperance – initial results, 26 March  
Esperance lead issue update, 4 April